

EXPLORING THE TRENDS, THE SCIENCE, AND THE OPTIONS OF BUFFER MANAGEMENT IN THE GREAT BAY WATERSHED

October 2015 -2017



WHO IS A PART OF THIS PROJECT?



WHAT ARE WE TRYING TO DO?

In the long term:

Prevent degradation, enhance water quality, habitat, flood mitigation through buffer options

During the project:

Summarize the best available science, simplify how to get good technical and policy information, and understand how and why communities implement buffers

A FEW WORDS ABOUT THIS PROJECT

- We are summarizing existing science, not generating new
- We are not proposing a solution or a right answer to this problem, we are pulling information together so stakeholders can do that for themselves

WHO DO WE THINK WILL USE THIS STUFF?

- Great Bay National Estuarine Research Reserve
 - The Nature Conservancy
 - NH Department of Environmental Services
 - Piscataqua Regional Estuaries Partnership
 - Outreach and extension partners
 - Municipalities
 - Other land protection and restoration groups
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STEPS

- Focus geographically – Great Bay
 - Summarize information re: buffer function and value
 - Explore options to enhance and protect buffers
 - Understand state and local perspectives on the barriers and opportunities related to buffers
 - Produce products that use the information and creative options
 - Develop a plan for continuing to advance the topic in the Great Bay region after this project is over
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TO FOCUS GEOGRAPHICALLY WE WILL...



GIS Watershed
Scale Analysis



Community
context in the
watershed

TO SUMMARIZE INFORMATION, WE
ARE.....

Conducting a policy and economic analysis

Reviewing buffer science literature

Conducted a community assessment (local scale)

TO EXPLORE OPTIONS FOR BUFFER MANAGEMENT, WE ARE.....

- **Reviewing** incentives and regulatory options for protecting buffer areas
 - **Synthesizing** the analysis of information about barriers to success, and innovative solutions
 - **Evaluating the options** on how likely to be adopted, how well does it protect the values the communities care about, etc.
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TO SHARE WHAT WE LEARN, WE WILL...

- Use opportunities throughout the project to **test communication/product development ideas** with end users, Advisory Board, etc.
 - **Develop communication tools** that support end users in evaluating options
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TO MAINTAIN MOMENTUM AFTER THE PROJECT IS DONE, WE WILL...

- Develop a method for collecting “ideas” throughout the project
 - Develop a follow up plan for efforts after this project ends that is vetted by the Advisory Committee
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TO DO THIS IN A TRANSPARENT, CREDIBLE AND LEGITIMATE WAY, WE WILL....

- We will **engage our Advisory Board** in a meaningful way
 - We will **assess barriers and opportunities and generate new ideas** at the agency/watershed scale and at the community scale
 - We will use a **technical review** process that gives us feedback when we most need it
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LITERATURE REVIEW

GOAL

- Synthesize the best available science to inform protection and restoration strategies
- What do we know about the ways buffers can promote key ecosystem services around Great Bay?



METHODS

- Not exhaustive, but comprehensive
 - Drew from New Hampshire Association of Natural Resource Scientists, meta-analysis papers
 - ~120 papers cited
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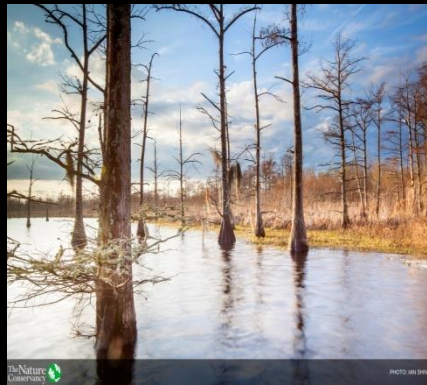
FINDINGS

- Buffers help to promote key ecosystem services

water quality



flooding



erosion



wildlife habitat



BUFFERS PROMOTE WATER QUALITY

- Reduce transport of excess nutrients and contaminants
 - Reduce issues with sedimentation
 - Provide organic inputs
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BUFFERS REDUCE FLOOD RISK

- Reduce severity of flood events
- Promote floodplain water storage

BUFFERS PREVENT EROSION

- Stabilize shorelines
- Reduce runoff



Colourbox

BUFFERS PROVIDE WILDLIFE HABITAT

- Critical habitat for phases of the life cycle
 - Connectivity
 - One-third of New Hampshire's native wildlife depends on this habitat
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IMPORTANCE OF BUFFER CHARACTERISTICS



Importance of Landscape Context

- Impacts from agriculture, development
- Upslope/downslope attributes influence buffer design



BUFFER WIDTH RECOMMENDATIONS

- How wide do buffers need to be?

Promote Water Quality	Reduce Flood Risk	Prevent Erosion	Provide Wildlife Habitat
100 ft.	100 ft.	100 ft.	300 ft.

TAKEAWAYS

- Wider and more forested buffers
 - Importance of both local and landscape buffer contexts
 - 100 ft. buffers to promote water quality, reduce flood risk, and prevent erosion; 300 ft. buffers to provide wildlife habitat
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COMMUNITY ASSESSMENT

COMMUNITY ASSESSMENT (CA)

TAKING THE TIME TO TALK

The CA captures the
local experiences,
approaches, and
perspectives related to buffers

Providing information about
buffer-related efforts, inform the project's evaluation
of options, and identify needs and opportunities



GOALS To gain a better understanding of the

challenges,

opportunities,

perspectives,

and values



or community context associated with buffers

KEY QUESTIONS

What are the values, perspectives, and concerns that influence buffer decisions?

What are their information gaps and support needs?

What challenges and opportunities are associated with various buffers?

METHODS

Face/face interviews that were semi-structured

Interviews started with
an overview of the project,
the purpose of the interview,
and how we would use the information.

Interviews were recorded with permission. All
but two of the interviews were recorded.

WHO WE INTERVIEWED

13 Municipal staff

- 4 Code Enforcement Officers
- 4 Planners
- 3 Town Administrators/Managers
- 2 other

10 Municipal board members:

- 4 Conservation Commissioners
- 2 Planning Board members
- 2 Zoning Board members
- 2 Select Board members

15 other stakeholders:

- 4 engineers
- 2 wetland scientists
- 3 developers
- 4 regional planners
- 2 other outreach/technical assistance providers



NEXT STEPS AND QUESTIONS

Working now to synthesize the BOB components; Tech Review, Policy Review, Economic Analysis, CA and GIS into a final product.

Project is scheduled to be completed this fall 2017.

OVERVIEW OF WHAT WE HAVE HEARD

These findings are organized into the following categories:

1) Challenges

- Municipal
- State
- Implementation
- Economics
- Politics/culture
- Understanding/awareness/engagement/perspectives
- Language/communication

2) Needs/opportunities

- Science/technical/information
- Outreach/education
- Regulatory/decision-making process

3) Community context factors

EXAMPLES OF WHAT WE HAVE HEARD

1) **Challenges:** Regulations/decision-making process – municipal level

- Recognition that lack of clarity/specificity in ordinance is an issue, but some resistance to expanding ordinance – viewed as more burdensome to implement
- Perception that they won't be able to implement stronger ordinance (due to logistics, capacity, legal concerns) → resistance to adopting ordinance
- Turnover – lose understanding of original reasoning behind ordinances

EXAMPLES OF WHAT WE HAVE HEARD

2) **Needs/opportunities:** Science/technical/information needs

- Need good science, justification for buffer distances – want to know what's the “added benefit” for increasing size of buffers (quantifiable); want distilled recommendations/reasoning
- Municipal stakeholders need a better understanding of the legal context (e.g., takings, boards' authority/responsibility)
- Maybe a build-out analysis using different buffer-width scenarios – quantify impact on town's development potential and on natural resources

EXAMPLES OF WHAT WE HAVE HEARD

3) **Community Context:** Factors that may influence buffer-related decisions

- Drinking water source (well vs. surface water) – seeing some influence of this factor in terms of perspectives about buffers
- MS4 is on people's minds, see some connection between stormwater and buffers
- Changing community composition/dynamics – people who grew up in town vs. newcomers who lack connection
- Development pressure rising – some communities encouraging it (“sustainability” of town; tax base), others trying to resist (protect rural character)

Questions for me?

Questions for you.

What are enforcement challenges?

What are the best resources for reaching land owners?

Please contact me with questions and or input for the project on any of the topics discussed here today.

WETLAND BUFFER

